



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,396	01/28/2004	Robert A. Erickson	K-2081	3342
27877	7590	02/24/2006	EXAMINER	
KENNAMETAL INC. P.O. BOX 231 1600 TECHNOLOGY WAY LATROBE, PA 15650			ADDISU, SARA	
			ART UNIT	PAPER NUMBER
			3722	

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/766,396	ERICKSON, ROBERT A.	
	Examiner	Art Unit	
	Sara Addisu	3722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 11/15/06 have been fully considered but they are not persuasive.

Regarding claim 1 of Applicant's argument (Page 6, lines 8-9), "Aebi appears to disclose a milling cutter with indexable inserts having a general shape of a parallelogram. See col. 3, lines 3-11", Examiner respectfully points out that Aebi et al. teaches a lozenge insert including angles δ between 40-70 degrees ('369, Col. 3, lines 3-6). Angles δ represents the tip portion of the cutting insert as shown in Figures 8A & 8B (also look at '369, Col. 2, lines 16-18). Therefore Aebi et al. teaches a cutting insert having a corner configuration of a nose radius.

Regarding claims 1, 5 and 9 of Applicant's argument (Page 6, lines 10-13 and page 7, lines 1-+), "Applicant asserts that the Office Action fails to establish prima facie case of obviousness. Specifically, there is no mention in Yamazaki or Aebi of at least the feature of a cutting insert mounted to a tool holder having a nose radius with a center RC....". Refer to the argument above regarding Aebi et al. teaching an insert with a nose radius. Regarding Yamazaki, Examiner respectfully points out that even though Yamazaki teaches in figures 4a & 4b, the tool making triangular screw (therefore may need inserts with sharp corners), Yamazaki does not teach away from making different

Art Unit: 3722

kinds of screws. In fact, Yamazaki teaches the tool being capable of forming screws having optional shape ('782, Col. 3, lines 12-15). Additionally, Yamazaki teaches the possibility of machining flank portions 17a and 17b of the ridge at the optional angle, and to easily machine various screw ridges such as trapezoidal screws, square screws and triangular screws by tools of the little numbers such as a rectangular byte 21A and a lozenge byte 21B, even if the exclusive tools formed with the shape of a ridge is not used. Given this flexibility of Yamazaki's tool, Aebi et al. was used to modify Yamazaki such that a screw having a radius at its thread valley is produced, which would then require the use of a different kind of insert (i.e. insert with a nose radius). Examiner asserts that screw threads having a radius at its thread valley is old and well known for the purpose of eliminating stress concentration and to enhance more thread contact and thus decrease thread failure (as evidenced by Baba, JP 2000133436, see abstract).

Regarding claim 5 of Applicant's argument (Page 6, lines 16-17) "In addition, there is no mention of Yamazaki of a tool spindle", Applicant is referred to the rejection made in the previous action (mailed 10/6/05) and repeated below, where the teaching of Katoh et al. (U.S. Pub. No. 2004/0003690) was used in a 103 rejection.

Regarding Applicant's argument (Page 6, lines 18-23), "Yamazaki requires that the machine tool 1 use a computer pattern PAT1 for the square screw and PAT2 for the triangular screw that vary the degree of the B axial angle, as shown in Figs. 4a and 4b. To the contrary the claimed invention is directed to aligning the toolholder at a fixed, non-zero angle, based on the geometry of the cutting insert", Examiner points out that these patterns (PAT1 and PAT2) are different based on the different cuts necessary

Art Unit: 3722

to make the screw. However, as mentioned above, Yamazaki teaches the tool being capable of forming screws having optional shape ('782, Col. 3, lines 12-15). If one was to make a screw having a radius at its thread valley (as evidenced by Baba, JP 2000133436, see abstract), then a different insert would be necessary thus the pattern for that particular cut would be based on the geometry of the insert and the tool would be fixed at a non-zero angle as taught by Yamazaki. Additionally, Yamazaki's teaches based on angle AG of the ridge of the machining program PRO, the cutting pattern decides this degree of the B axial angle, for example, as is shown by rough/finishing machining process (circled numbers from 9 to 12) of the first and the second flank portion in FIG. 5 ('782, Col. 4, lines 60-65). Therefore, for each circled number, the tool would be fixed at a specific fixed non-zero angle.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 6, 7, 9-12, 15 and 17 are finally rejected under 35

U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. Patent No. 6,453,782), in view of Aebi et al. (U.S. Patent No. 4,940,369) and further in view of Baba (JP 2000133436).

Yamazaki et al. teaches a tool rest (tool holder) (20) having an insert (22) that is aligned/lies on the same centerline as the tool and rotational axis (CT2) while also being aligned in a direction away from the direction of cutting of the workpiece (see Figures 1 and 4b). Yamazaki et al. also teaches the centerline of the tool holder (20) being able to move freely in the B axis, indicated by G-H arrow in fig 1 (Col. 2, lines 54-59), therefore be aligned at a non-zero angle (θ) with respect to an axis, P, that is perpendicular to a longitudinal axis work piece (17) (see diagram below). Furthermore, Yamazaki et al. teaches machining program (PRO) being used to decide the degree of the B-axis angle (i.e. non-zero angle) (Col. 4, lines 60-63). Additionally, Yamazaki teaches a tool holding portion (20a) is formed on the tool rest (20) with a turning tool (21) attached to it. The tool holding portion (20a) is provided as to freely fix and hold a tool in a predetermined holding state and to be freely driven to rotate (therefore has a tool spindle rotatably mounted to a spindle housing) in the direction as shown by the arrows I and J, which is the direction around the axial center CT2, and be positioned ('782, Col. 2, lines 60-67). Examiner respectfully points out that even though Yamazaki teaches in figures 4a & 4b, the tool making triangular screw (therefore may need inserts with sharp corners), Yamazaki does not teach away from making different kind of screws. In fact, Yamazaki teaches the tool being capable of forming screws having optional shape ('782, Col. 3, lines 12-15). Additionally, Yamazaki teaches the possibility of machining flank portions 17a and 17b of the ridge at the optional angle, and to easily machine various screw ridges such as trapezoidal screws, square screws and triangular screws by tools of the little numbers such as a rectangular byte 21A and a lozenge byte 21B, even if the

Art Unit: 3722

exclusive tools formed with the shape of a ridge is not used. Given this flexibility of Yamazaki's tool, Examiner asserts that screw thread having a radius at its thread valley is old and well known for the purpose of eliminating stress concentration and to enhance more thread contact and thus decrease thread failure, as evidenced by Baba, JP 2000133436 (see abstract). If one was to make a screw having a radius at its thread valley (as evidenced by Baba, JP 2000133436), then a different insert would be necessary thus the pattern for that particular cut would be based on the geometry of the insert and the tool would be fixed at a non-zero angle as taught by Yamazaki. Additionally, Yamazaki's teaches based on angle AG of the ridge of the machining program PRO, the cutting pattern decides this degree of the B axial angle, for example, as is shown by rough/finishing machining process (circled numbers from 9 to 12) of the first and the second flank portion in FIG. 5 ('782, Col. 4, lines 60-65). Therefore, for each circled number, the tool would be fixed at a specific fixed non-zero angle.

Regarding claims 2, 6 and 10, Yamazaki et al. fails to specify the non-zero angle to be in the range of 25-45 degrees. However, Yamazaki et al. teaches a machining program (PRO) being used to decide the degree of the B-axis angle in fig 1 (Col. 4, lines 60-63). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a computer program to rotate the tool holder at an appropriate optimize angle (25-45 degrees) since such a modification would have allowed a greater flexibility of cut.

Regarding claims 3, 7 and 11, Yamazaki et al. discloses the claimed invention except for the tool length size being in the tool length range of 80-120mm. It would have been an obvious matter of design choice to a person of ordinary skill in the art to select a length of the tool length based on the tool application because Yamazaki et al.'s teaches a plurality of turning tools (21) being installed on the tool rest (20) having a main body (21a). Furthermore, Applicant teaches on Page 6, lines 1-5, "by inclining or tilting the toolholder spindle 106 at 45 degrees for example, with respect to the axis, P, and also the longitudinal axis, LW, of the workpiece 120), the tool length, L, can be shortened". This is equally supported by the fact that Yamazaki et al.'s invention allows for tilting/inclining the tool holder { Yamazaki et al. teaches the centerline of the tool holder (20) being able to move freely in the B axis, indicated by G-H arrow in fig 1, therefore be aligned at a non-zero angle (θ) with respect to an axis, P, that is perpendicular to a longitudinal axis work piece (17). Furthermore, Yamazaki et al. teaches machining program (PRO) being used to decide the degree of the B-axis angle (i.e. non-zero angle) ('782, Col. 4, lines 60-63)}.

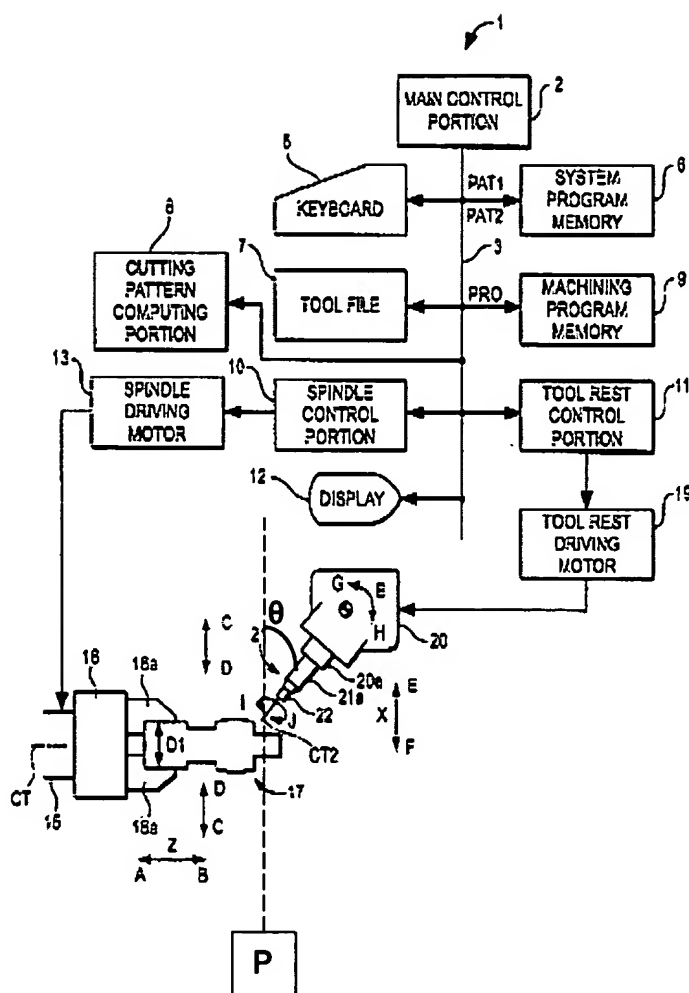
However, Yamazaki et al. is silent as to lozenge insert (23) ('782, figure 4b) having a nose radius.

Aebi et al. teaches a lozenge insert including angles δ between 40-70 degrees ('369, Col. 3, lines 3-6). Angles δ represents the tip portion of the cutting insert as

shown in Figures 8A & 8B (also look at '369, Col. 2, lines 16-18). Therefore Aebi et al. teaches a cutting insert having a corner configuration of a nose radius.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Yamazaki et al.'s invention such that the lozenge insert used has a corner radius, as taught by Aebi et al. to achieve a different cutting operation such as a thread with a radius at its valley for the purpose of eliminating stress concentration and to enhance more thread contact and thus decrease thread failure (as evidenced by Baba, JP 2000133436, see abstract). because a lozenge insert does not always limit it to an insert having sharp corners as shown in ('782, figure 4b). Furthermore, Yamazaki et al. teaches the lozenge cutting tool for screw cutting (21B) being among the plurality of tools (21) to be installed on the tool rest (20) having a main body (21a) and a lozenge insert (23) installed on the tip of the main body (21a) ('782, Col. 3, lines 6-11).

FIG. 1



2. Claims 5, 8, 13, 14 and 16 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. Patent No. 6,453,782), in view of Aebi et al. (U.S. Patent No. 4,940,369) and further in view of further in view of Baba (JP 2000133436) and Katoh et al. (U.S. Pub. No. 2004/0003690).

The modified device of Yamazaki et al. teaches a tool rest (tool holder) (20) having an insert (22) with a nose radius that is aligned with the centerline of the toolholder, as set forth in the above rejection.

However, the modified device of Yamazaki et al. fails to disclose expressly the presence of a spindle.

Although, Yamazaki et al. fails to disclose expressly the presence of a spindle, Yamazaki et al. teaches a tool holding portion (20a) being provided as to freely fix and hold a tool in a predetermined holding state and to be freely driven to rotate (therefore has a tool spindle rotatably mounted to a spindle housing) in the direction as shown by the arrows I and J, which is the direction around the axial center CT2 ('782, Col. 2, lines 60-67). The use of spindle to rotate a tool holder is evidenced by Katoh et al. (U.S. Pub. No. 2004/0003690), which teaches turret body being provided with a tool spindle for detachably attaching a complex tool so as to be freely rotated with an axial center as its center. The turret body is provided with indexing means for indexing the tool spindle, and clamping means for clamping the tool spindle at an indexed position indexed by the indexing means. The turret body has a function for indexing the tool spindle for attaching the complex tool thereto and a function for clamping, thereby using the complex tool in a turret lathe (2004/0003690, abstract and figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate a spindle to rotate the tool as evidenced by Katoh et al. (U.S. Pub. No. 2004/0003690).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Addisu at (571) 272-6082. The examiner can normally be reached on 8:30 am - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3722

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sara Addisu
(571)272-6082

SA
2/17/06



BOYER D. ASHLEY
SUPERVISORY PATENT EXAMINER